REMARKS

Claims 1-2 and 6-14 are rejected under 35 USC §103 as being unpatentable over Scalora, U.S. 6,262,830.

Independent claim 1 recites an optical device having a plurality of high index layers and a plurality of low index layers. The optical device is formed by creating alternating layers of the plurality of high index layers and the plurality of low index layers having a relationship

$$E_{g,l} > E_{g,h} > hc/\lambda$$

where $E_{g,h}$ is the band gap of a high index material used in the high index layers, $E_{g,l}$ is the band gap of a low index material used in the low index layers, λ is wavelength of light of interest, h is Plank constant, and c is the speed of light so that electricity and heat is conducted through the optical device.

Scalora '830 describes a transparent metal structure that permits the transmission of light over a tunable range of frequencies, for example, visible light, and shields ultraviolet light, and all other electromagnetic waves of lower frequencies, from infrared to microwaves and beyond. The transparent metal structure comprises a stack of alternating layers of high index material and low index materials, at least one of the materials being a metal.

Independent claim 1 now recites that the high and low index layers follow the relationship $E_{g,l} > E_{g,h} > hc/\lambda$. Scalora et al. '830 does not teach or suggest limiting its alternating high and low index materials using the claimed relationship of the invention. Furthermore, Scalora '830 focuses on the thickness of the low index material layers as a way

to tune its transparent window over a wide range of frequencies. This is contrary to what the invention, as recited in claim 1, uses to provide an optical device that can also be thermally and electrically conductive. Again, the $E_{g,l} > E_{g,h} > hc/\lambda$ relationship establishes the parameters for which the invention will successfully operate. Therefore, Scalora '830 does not render claim 1obvious.

As to claims 2 and 6-14, they are dependent on claim 1, respectively. Therefore, claims 2 and 6-14 are also allowable for the same reasons argued with respect to claim 1.

Claims 3-5 are rejected under 35 USC §103 as being unpatentable over Scalora '830 in view of Knapp et al., U.S. 6,077,569.

Knapp et al. '569 describes an improved method for the deposition of highly durable and abrasion-resistant multilayer dielectric antireflective coatings and reflective colored mirror coatings onto plastic lenses.

Given that claims 3-5, are dependent on claim 1, the reasons argued for claim 1 are also applicable here. Also, Knapp et al. '569 does not address the deficiencies of Scalora '830. Therefore, the proposed combination of Scalora '830 and Knapp et al. '569 does not render obvious claims 3-5.

Claim 29 is rejected under 35 USC §103 as being unpatentable over Duck et al., U.S. 5,615,289.

Independent claim 29 recites a Fabry-Perot device that includes a plurality of high index layers and a plurality of low index layers. The Fabry-Perot device also includes a top mirror that includes alternating layers of the plurality of high index layers and the plurality of

low index layers, and a cavity structure that includes a bulk of a selective material. The Fabry-Perot also includes a bottom mirror that includes alternating layers of the plurality of high index layers and the plurality of low index layers. The high index layers and the low index layers having a relationship

$$E_{g,l} > E_{g,h} > {hc}/{\lambda}$$

where $E_{g,h}$ is the band gap of a high index material used in the high index layers, $E_{g,l}$ is the band gap of a low index material used in the low index layers, λ is wavelength of light of interest, h is Plank constant, and c is the speed of light so that the top mirror and bottom mirror allow electricity and heat to be conducted through the Fabry-Perot device.

Duck et al. '289 describes a bandpass filter that is formed within an optical filter in the form of a Bragg grating. The grating includes multiple Fabry Perot cavities disposed along the waveguide. Each of the cavities includes a pair of reflectors. Each reflector comprises alternating high-low index regions within the waveguide. The number of high/low regions within a reflector is selected in accordance with the refractive index difference between two alternate adjacent regions.

Amended claim 29 now recites that the high and low index layers follow the relationship $E_{g,l} > E_{g,h} > {hc}/{\lambda}$. Duck et al. '289 does not teach or suggest limiting its alternating high and low index materials using the recited relationship. Furthermore, Duck et al. '289 relies heavily on the fact that each reflector comprises alternating high-low index regions within a waveguide, each region having thickness of one quarter-wave at a bandpass wavelength, each alternate region being of a different index of refraction than an adjacent

region. This is contrary to what the invention, as recited in claim 29, uses to provide an optical device that can also be thermally and electrically conductive. Again, the $E_{g,l} > E_{g,h} > hc/\lambda$ relationship establishes the parameters for which the invention will successfully operate. Therefore, Duck et al. '289 does not render claim 29 obvious.

In view of the above amendments and for all the reasons set forth above, the Examiner is respectfully requested to reconsider and withdraw the rejections made under 35 U.S.C. § 103. Accordingly, an early indication of allowability is earnestly solicited.

If the Examiner has any questions regarding matters pending in this application, please feel free to contact the undersigned below.

Respectfully submitted,

Matthew E. Connors
Registration No. 33,298
Samuels, Gauthier & Stevens
225 Franklin Street, Suite 3300
Boston, Massachusetts 02110
Telephone: (617) 426-9180
Extension: 112